

A.2.9 SWMU 17

Description

SWMU 17 was identified based on the indicated presence of TEL burials on the Refinery Leaded Burial Map. SWMU 17 consists of a suspected 40-foot by 40-foot TEL sludge burial located in the eastern portion of Tank Basin 301 in the North Field. This TEL burial area is located down gradient of LNAPL Area NF5; in a part of the Refinery that appears to have been impacted by petroleum releases.

As shown on Figure A.2.7 and summarized on Table A.2.7, data from six soil borings, 10 soil samples and one hydropunch sample have been used to characterize this SWMU. In addition, relevant data from other investigations are shown on Table A.2.7 for delineation purposes. Two borings, SB0038 and U017002, were installed during the 1st-Phase Soils Investigation to provide data for source characterization of SWMU 17. Additionally, three borings (S0768, S0769 and S0770) were installed during the full RFI to further characterize this SWMU, and to determine the presence of a leaded burial site. All 10 soil samples were analyzed for VOCs, SVOCs, lead and TOL or TEL. One of these samples (S0770C3) was also analyzed for SPLP lead and physical characteristics.¹

Soils

Although staining was not evident in the two 1st-Phase Soils Investigation borings, a petroleum odor was noted in both borings and elevated PID readings (485 ppm) were observed at 4 to 4.8 ft bgs in the SB0038 boring. Residual LNAPL was observed in one of the three borings (S0770) installed during the Full RFI. Elevated PID readings (ranging from 315 to 2,928 ppm) were observed in the three Full RFI borings.

The following table summarizes the number of samples where soil delineation criteria were exceeded within SWMU 17:

Constituents of Concern	Surface Soils (0 to 2 ft) (3 Samples)	Fill Material (>2 ft) (3 Samples)	Native Soils (4 Samples)	Totals (10 Samples)
Benzene	1/3	2/3	2/4	5/10
Other VOCs	1/3	2/3	0/4	3/10
Benzo(a)pyrene	0/3	1/3	0/4	1/10
Other SVOCs	0/3	1/3	1/4	2/10
Lead	1/3	2/3	0/4	3/10
TOL/TEL	1/3	2/3	0/4	3/10

¹Physical characteristics specified in Appendix A, Task IV of Module III of the HWSA Permit included saturated and unsaturated permeability tests, moisture content, relative permeability, bulk density, porosity, soil sorptive capacity, CEC, TOC, pH, Eh and grain size distribution.

Surface Soils

Limited petroleum-related impacts were observed in the surficial fill material. An elevated PID reading (315 ppm) was noted in the 1.5 to 2 foot range at S0768, but the surficial soil sample from this interval (S0768A3) had no exceedances of applicable soil delineation criteria. Benzene (50 mg/kg) and several other VOCs, lead (428 mg/kg), and TOL (2.8 mg/kg) were detected above the soil delineation criteria in one of the three surface soil samples (S0769A4) collected from SWMU 17. The presence of these VOCs may be related to the shallowness of the water table in the vicinity of SWMU 17 (depth to groundwater ranges from approximately 0.5 to 5 feet bgs). The third surface soil sample (S0770A4) had no COCs above soil delineation criteria.

Fill Materials (>2 feet bgs)

Odors, staining, and other evidence of petroleum-related impacts were noted in the fill material, which ranges in thickness from approximately five feet to eight feet in the vicinity of SWMU 17. All three samples collected from the fill layer within SWMU 17 contained exceedances. Two of the samples contained benzene, lead and TOL above the applicable soil delineation criteria. Benzo(a)pyrene and two other PAHs were detected above the applicable soil delineation criteria in one of the samples (S0768B4). The fill sample from SB0038 was the only sample that contained a VOC (e.g., benzenethiol) that did not also contain benzene and/or benzo(a)pyrene above the delineation criteria.

Native Material

A peat/clay layer underlies SWMU 17 at depths ranging from approximately five to eight feet. Three of the four samples collected from within native soils at this SWMU contained exceedances of the soil delineation criteria. These samples were collected from the peat layer at depths ranging from five to 10 feet bgs. Benzene was the only COC detected above the soil delineation criterion in two of these samples. Two PAHs, benzo(a)anthracene (1.8J mg/kg) and benzo(b)fluoranthene (1.2J mg/kg), were the only COCs detected above the soil delineation criteria in the third native soil sample (S0770C3). The sample collected at 11.5 to 12 feet bgs from the same boring (S0770F4) contained no exceedances of the soil delineation criteria. Therefore, although COCs were detected above the applicable soil delineation criteria in the native material, the potential impacts appear to be confined to the uppermost portion of the peat layer (less than 10 feet bgs), and vertical delineation is complete for SWMU 17.

As discussed further in Section 6 of the RFI Report, lateral delineation of selected COCs has been completed on a site-wide basis for each Yard. The delineation of these COCs is depicted graphically on the figures provided in Section 6.

Groundwater

The only sample (hydropunch sample HP0087) collected from groundwater within this SWMU contained benzene and several other organic compounds above the groundwater

delineation criteria. Lead was detected in this sample above the groundwater delineation criterion; however, the presence of lead in the sample is likely attributable to the sample collection method and is not representative of groundwater conditions within this SWMU. A hydropunch sample (H0323) located down gradient of this SWMU also contained benzene and lead. However, there were no COCs detected above the groundwater delineation criteria in the 2002 groundwater sample from monitoring well P0002, which is located in close proximity to SWMU 17. A more detailed discussion of potential groundwater impacts can be found in Section 8 of the RFI Report.

Summary

A number of COCs, including but not limited to, benzene, benzo(a)pyrene, lead and TOL/TEL have been detected above the soil delineation criteria in a number of soil samples collected from the surface soil, fill layer and the underlying native soil layer within SWMU 17. These constituents, especially lead and TEL/TOL, are consistent with those expected to be associated with the burial of gasoline tank bottom materials. In addition, the depth at which these constituents were detected in soils is consistent with waste management practices believed to have been conducted in this area. Therefore, SWMU 17 is a confirmed TEL burial site, and will be included for further evaluation in the CMS. Groundwater samples collected near SWMU 17 also contained COCs above the applicable groundwater delineation criteria. Therefore, groundwater in the vicinity of SWMU 17 will be evaluated further in the CMS.